

Biographical Information

Education

- July 1999 **Ph.D., Electrical Engineering,**
Virginia Polytechnic Institute and State University, Blacksburg, VA
Dissertation Title: *Improving the Real-Time Performance of a Wireless Local Area Network*. Advisor: Nathaniel J. Davis IV
- December 1992 **Master of Science, Computer Engineering,**
Air Force Institute of Technology, Wright-Patterson AFB, OH
Curriculum Sequence: Software Engineering
Thesis Title: *A Model for Determining Task Set Schedulability in the Presence of System Effects*. Advisor: Paul D. Bailor
- January 1988 **Bachelor of Science, Electrical Engineering (Cum Laude),**
New Mexico State University, Las Cruces, NM
Curriculum Sequence: Digital Electronics

Research and Scholarly Activities

Publications

Archival Journal Publications (6)

- 1) B. Trapp, G. H. Gunsch, R. A. Raines, R. O. Baldwin, "Evaluation and Mission-Specific Optimization of Satellite Packet Telemetry Protocol For Use On DoD Flight Test Ranges," *ACM Mobile Computing and Communications Review* (accepted Sept 2002).
- 2) R. O. Baldwin, N. J. Davis IV, S. F. Midkiff, and J. E. Kobza, "Queueing Network Analysis: Concepts, Terminology, and Methods," *Journal of Systems and Software*, 19 pgs (accepted November 2001, target publication date of early 2003).
- 3) R. W. Thomas, R. A. Raines, R. O. Baldwin, and M. A. Temple, "Performance Analysis of Multicast Protocols for Mobile Satellite Communication Networks," *Computer Communications Journal, Special Issue on Advances in Performance Evaluation of Computer and Telecommunications Networking* (invited submission), July 2002, Vol. 25, No. 11-12, pp. 1085-1093.
- 4) R. O. Baldwin, N. J. Davis IV, S. F. Midkiff, and R. A. Raines, "Packetized Voice Transmission using RT-MAC, a Wireless Real-time Medium Access Control Protocol," *ACM Mobile Computing and Communications Review*, July 2001, Vol. 5, No. 3, pp. 11-25.

- 5) R. O. Baldwin, N. J. Davis IV, J. E. Kobza, and S. F. Midkiff, "Real-time Queueing Theory: A Tutorial Presentation with an Admission Control Application," *Queueing Systems*, June 2000, Vol. 35, pp. 1-21 [Included in the tutorial presentation is an extension of the theory to include GI/G/1 queues. Results included simulation of extended theory in a realistic application to show its validity and effectiveness].
- 6) R. O. Baldwin, N. J. Davis IV, and S. F. Midkiff, "A Real-time Medium Access Control Protocol for ad hoc Wireless Local Area Networks," *ACM Mobile Computing and Communications Review*, April 1999, Vol. 3, No. 2, pp. 20-27.

Refereed Conference Publications (7)

- 1) C. M. Canadeo, M. A. Temple, R. O. Baldwin, and R. A. Raines, "Code Selection for Enhancing UWB Multiple Access Communication Performance Using TH-PPM and DS-BPSK Modulations," *Proceedings of the IEEE Wireless Communications and Network Conference (WCNC 2003)*, New Orleans, LA, March 2003 (accepted November 2002).
- 2) T. M. Schwamb, R. O. Baldwin, R. A. Raines, and M. A. Temple, "Performance Analysis of a Dynamic Bandwidth Allocation Algorithm in a Circuit-Switched Communications Network," *IEEE MILCOM 2002*, Anaheim, CA, October 2002, pp. 90-1-90-5.
- 3) J. T. Ballah, R. O. Baldwin, R. A. Raines, and G. H. Gunsch, "Integrated MANET Mutual Authentication System (IMMAS)," *2002 International Symposium on Performance Evaluation of Computer and Telecommunication Systems*, San Diego, CA, July 2002, pp. 7.C.1-7.C.8.
- 4) E. M. Koper, S. W. Schneider, W. D. Wood, R. O. Baldwin, and R. R. Hill, "A Genetic Algorithm and Local Search Technique for Minimization of Monopole Coupling on Aircraft by Physical Antenna Placement," *IEEE International Symposium and USNC/URSI National Radio Science Meeting*, San Antonio, TX, June 2002, pp. 46.7-1-46.7-4.
- 5) R. W. Thomas, R. A. Raines, R. O. Baldwin, and M. A. Temple, "Simulation Modeling and Evaluation of Satellite-Based Multicasting Protocols," *Fall 2001 IEEE Vehicular Technology Conference*, Atlantic City, NJ, October 2001, Vol. 1, pp. 305-309.
- 6) R. W. Thomas, R. A. Raines, R. O. Baldwin, and M. A. Temple, "Performance Analysis of Multicast Protocols for Mobile Satellite Communication Networks," *2001 International Symposium on Performance Evaluation of Computer and Telecommunication Systems*, Orlando, FL, July 2001, pp. 27-34.
- 7) R. O. Baldwin, N. J. Davis IV, and S. F. Midkiff, "Implementation of an IEEE 802.11 Wireless LAN Model using OPNET," *1998 OPNETWORK*, Washington D.C., June 1998, pp. 6.1-6.5. Received "Distinguished Paper" award.

Other Publications (1)

- 1) R. G. Bonesteele and R. O. Baldwin, "Block 6: The Future DMSP Space Systems," *Tactical Applications of Space Systems, Advisory Group for Aerospace Research and Development*, AGARD-CP-460, Colorado Springs, CO, October 1989, pp. 12.1-12.5.

Papers Currently In Review (3)

- 1) C. W. Stinson, R. O. Baldwin, R. R. Raines, and M. A. Temple, "Performance of IPv6 over Link-16 in a JBI Network," (submitted to *IEEE MILCOM 2003*), January 2003.
- 2) R. B. Noel, R. O. Baldwin, R. R. Raines, and M. A. Temple, "WLAN CSMA/CA Performance in a Bluetooth Interference Environment," (submitted to *Computer Communications Journal*), November 2002.
- 3) B. S. Peterson, R. O. Baldwin, J. P. Kharoufeh, and R. R. Raines, "Refinements to the Packet Error Rate Upper Bound for Bluetooth," (submitted to *IEEE Communication Letters*), October 2002.

Grants and Awards (Total: \$614,653)

R. O. Baldwin, R. A. Raines, and M. A. Temple, "Classification and Analysis of Wireless Personal and Local Area Network Communication Techniques," National Security Agency, \$35,000.00, December 2002.

R. O. Baldwin, "2002 Virtex University Program – Equipment Grant," Xilinx Inc., \$245,000.00, November 2002.

R. O. Baldwin, M. A. Temple, and R. A. Raines, Technical Support, "AF Communication Systems Modeling," Air Force Communications Agency, \$58,000.00, November 2002.

R. O. Baldwin, R. A. Raines, and M. A. Temple, "Classification and Analysis of Wireless Personal and Local Area Network Communication Techniques," National Security Agency, \$30,000.00, May 2002.

R. O. Baldwin, "2002 Xilinx University Program – Software Grant," Xilinx Inc., \$34,000.00, March 2002.

R. A. Raines, R. O. Baldwin, and M. A. Temple, "AFIT/ENG Wireless Network Laboratory," Air Force Information Warfare Center, \$20,000.00, March 2002.

R. A. Raines, R. O. Baldwin, and M. A. Temple, "Security and Operational Compatibility of Heterogeneous Wireless Local Area Networks," Air Force Institute of Technology Cooperative Research and Development Agreement Salary Funding for Emerging Air Force Research Thrusts, \$30,653.00, December 2001.

R. O. Baldwin, M. A. Temple, and R. A. Raines, Technical Support, "AF Communication Systems Modeling," Air Force Communications Agency, \$78,000.00, October 2001.

R. O. Baldwin, M. A. Temple, and R. A. Raines, Technical Support, “AF Communication Systems Modeling,” Air Force Communications Agency, \$42,000.00, October 2000.

M. A. Temple, R. A. Raines, and R. O. Baldwin, Technical Support, “AF Communication Systems Modeling,” Air Force Communications Agency, \$42,000.00, April 2000.